

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

REISSUE APPLICATION  
of U. S. Patent No. 5,980,620

Application No. 09/880,556

Examiner: Anthony Green

Group Art Unit: 1755

Confirmation No. 9517

Title: INHIBITION OF BACTERIAL GROWTH

**SUPPLEMENTAL REISSUE DECLARATION OF CO-INVENTOR**

Commissioner for Patents and Trademarks  
Washington, DC 20231

I, RAINER CLOVER, a German citizen, hereby declare under penalties of perjury  
as follows:

1. I am a named co-inventor in the above U.S. Patent No. 5,980,620 and U.S. Patent No. 6,129,782, which was a continuation of the '620 patent.
2. I reside at and have a post office address of 418a Sutton Road, Walsall, West Midlands WS5 3BA. I am a German citizen.
3. I make this declaration and my prior declaration in support of the Reissue application of U.S. Patent No. 5,980,620 filed on June 13, 2001, which has been assigned Application Serial No. 09/880,556 by the United States Patent and Trademark Office.
4. I reviewed and understand the contents of the Office Action dated December 11, 2001 in the Reissue application.

5. I have reviewed the proposed amended claims which contain proposed additions by underlining those words and proposed deletions by bracketing of words. Claims 12-32 are entirely underlined, as they are newly presented claims in this Reissue application, beyond claims 1-11 which appeared in the 620 patent as issued.
6. Support for the claims presented in this Reissue application are as follows, along with a description of the proposed changes.

**Claim 1:** support for all of the features of Claim 1 can be found in US patent application 09/201,287 as filed (granted as U.S. Patent No. 5,980,620). Claim 1 of the earlier application refers to a substantially dry powder coating composition comprising particles of polymer powder containing a biocide, whereby the biocide is substantially uniformly distributed throughout the composition. Paragraph 4 of page 2 discloses a range of micro-organisms that the biocide is active against. Therefore the powder coating composition is anti-microbial and is not limited to anti-bacterial applications. Paragraph 3 of page 4 discloses the substantially homogeneous distribution of the biocide in the polymer. Claim 10 discloses the use of thermosetting polymers as the polymer powder. Paragraph 1 of page 3 discloses a range of organic biocides suitable for this application.

**Claim 2.** Claim 2 discloses a composition containing 0.1 to 20% by weight of a biocide. Claim 2 is not amended, see Claim 2 of ASN 09/201,287 as filed .

**Claim 3.** Claim 3 is not amended except to be dependent from claim 1 or 2, see Claim 4 of ASN 09/201,287 as filed .

**Claim 4.** Claim 4 is not being amended, see Claim 5 of ASN 09/201,287 as filed .

**Claim 5.** Claim 5 is not being amended except to be dependent from claims 1 or 2, see Claim 6 of ASN 09/201,287 as filed .

**Claim 6.** Claim 6 is not being amended, see Claim 7 of ASN 09/201,287 as filed.

**Claim 7.** Claim 7 is merely being amended to be dependent from claim 1 and 2, see Claim 8 of ASN 09/201,287 as filed .

**Claim 8.** Claim 8 is not being amended, see Claim 9 of ASN 09/201,287 as filed.

**Claim 9.** Claim 9 is not being amended, see Claim 10 of ASN 09/201,287 as filed.

**Claim 10.** Claim 10 is not being amended. Claim 14 of ASN 09/201,287, as filed discloses a method of distributing a biocide substantially uniformly in a powder coating composition in which precursors of a polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules are ground to form a powder, and the powder is sieved to a size appropriate for powder coating. Page 2, lines 3-5 of the application as filed discloses the use of a range of thermosetting polymers for this application. A range of suitable biocides is disclosed at page 3, lines 1-5 of the same application. Claim 2 discloses a powder coating composition containing 0.1 to 20% by weight of a biocide. Claim 9 of the same application discloses a polymer powder having a particle size of less than 100 microns. The electrostatic spraying of the powder coating composition is disclosed at page 4, lines 6-7.

**Claim 11.** Claim 11 is not being amended. Support for claim 11 is found in ASN 09/201,287 as filed. That does not specifically claim a method of forming a coating on a metal substrate, but all of the features of this claim are disclosed in the body of the specification. Claim 13 of the same application refers to a metal article having an anti-microbial powder coating thereon. Claim 14 of the same application discloses a method of distributing a biocide substantially uniformly in a powder coating composition in which precursors of a polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules are ground to form a powder, and the powder is sieved to a size appropriate for powder coating. Claim 10 of this application as filed discloses the use of a range of thermosetting polymers for this application. A range of suitable biocides is disclosed at page 3, lines 1-5 of the same application. The electrostatic spraying of the powder coating composition is disclosed at page 4, lines 6-7. The curing of the coating is disclosed at page 2, lines 11-15.

**Claim 12.** Support for all features of this Claim can be found in ASN 09/201,287 as filed. Paragraph 2 of page 1 discloses a powder coating composition containing a biocide. Paragraph 4 of page 2 discloses a range of micro-organisms that the biocide is active against. Lines 3 to 6 of page 2 disclose resin based polymer powders. Paragraph 3 of page 4 discloses the substantially homogeneous distribution of the biocide in the polymer powder.

**Claim 13.** Support for claim 13 is found in lines 11-12 of page 3 of ASN 09/201,287 as filed, which states that useful proportions of biocide are from 0.1 to 10% by weight of the total powder composition. It therefore follows that 90 to 99.9% of the total powder composition will comprise the polymer powder. Claim 10 of the earlier application discloses the use of thermosetting polymer powders in the composition. Claim 11 as filed discloses the use of

thermoplastic polymer powders in the composition.

**Claim 14.** Support for claim 14 is found in page 2 of ASN 09/201,287, which state that many suitable biocides may be employed in the invention. The criteria for a suitable biocide is that the biocide can be provided in a suitable powder form and that it can survive the coating process. It follows from this statement that the use of solid anti-microbial agents is supported by this disclosure.

**Claim 15.** Support for claim 15 is found in a method of applying an anti-microbial coating to an article on page 4, line 6 of ASN 09/201,287 as filed. This states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed), or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial powder coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to the article. The anti-microbial powder coating composition of this invention may comprise particles of a thermosetting polymer, disclosed in claim 10. Each particle of the polymer powder contains a particle of a biocide so that the biocide is substantially uniformly distributed throughout the composition (see page 1, lines 6-7). The biocide may be an organic biocide as disclosed at lines 1-5.

**Claim 16.** A method of applying an anti-microbial coating on an article is disclosed at page 4, line 6 of ASN 09/201,287 as filed. This application states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed), or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to

th article. The anti-microbial powder coating composition of this invention may comprise particles of a thermoplastic polymer, as disclosed in claim 11. Each particle of the polymer powder contains a particle of a biocide so that the biocide is substantially uniformly distributed throughout the composition (see claim 1). The biocide may be an organic biocide as disclosed at lines 1-5 of page 3. Claim 2 refers to a composition containing 0.1 to 20% by weight of a biocide.

**Claim 17.** A method of applying an anti-microbial coating on an article is disclosed at page 4, line 6 of ASN 09/201,287 as filed. This application states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed), or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial powder coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to the article. Lines 10-11 of page 4 of that application states that as each particulate contains the biocide, it is homogeneously distributed throughout the coating composition and so cannot separate out. Lines 6-7 of page 1 of the application disclose particulates comprising a polymer powder containing a biocide.

**Claim 18.** Support for all features of this claim can be found in ASN 09/201,287 as filed. Line 3 of page 1 states that it is one object of the invention to provide an anti-bacterial coating composition to be applied to a substrate. This protection is extended to a wider range of micro-organisms in lines 16-18 of page 2 of the application. A method of preparing the anti-microbial powder coating composition by homogeneously mixing an anti-microbial agent into a powder coating pre-mix is disclosed at page 4, lines 9-11.

**Claim 19.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states that many suitable biocides may be employed in the invention. The criteria for a suitable biocide are that the

biocide can be provided in a suitable powder form and that it can survive the coating process. A skilled person in this field would be aware that liquid biocides can be mixed with a suitable support matrix to form a powdered biocide suitable for this application. It is therefore implicit from this disclosure that the biocide may comprise a liquid biocide.

**Claim 20.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states that many suitable biocides or may be employed in the invention. The criteria for a suitable biocide is that the biocide can be provided in a suitable powder form and that it can survive the coating process. A skilled person in this field would be aware that liquid biocides can be mixed with a suitable support matrix to form a powdered biocide suitable for this application. It is therefore implicit from this disclosure that the biocide may be comprise a liquid biocide. The term biocide is interchangeable with anti-microbial agent.

**Claim 21.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states, "Many biocides may be suitable employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as N-(trichloromethyl)-thiolphthalamide may be substituted for those specifically mentioned.

**Claim 22.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can b provided in a suitable powder form and that it can survive the powder

coating". It is therefore implicit in this disclosure that other biocides such as 2-bromo-2-nitropropane-1,3-diol may be substituted for those specifically mentioned.

**Claim 23.** Claim 2 of ASN 09/201,287 as filed states the composition preferably contains 0.1 to 20% by weight of the biocide. As it is implicit from page 2, lines 18 to 23 of the earlier application as filed, that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 2-bromo-2-nitropropane-1,3-diol is within the scope of this invention.

**Claim 24.** Claim 2 of ASN 09/201,287 as filed states that the composition preferably contains 0.1% to 20% by weight of the biocide. Furthermore, Claim 3 of the same application states that a concentration between 2 and 6% by weight is more preferable. As it is implicit from page 2, lines 18 to 23 that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 2-bromo-2-nitropropane-1,3-diol is within the scope of this invention.

**Claim 25.** Page 2, lines 18 to 23 ASN 09/201,287 as filed states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione may be substituted for those specifically mentioned.

**Claim 26.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states, "Many biocides may be



suitable employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione may be substituted for those specifically mentioned.

**Claim 27.** Claim 2 of ASN 09/201,287 as filed states that the composition preferably contains 0.1 to 20% by weight of the biocide. Furthermore Claim 3 of the same application states that a concentration between 2 and 6% by weight is more preferable. As it is implicit from page 2, lines 18 to 23 of the earlier application that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione is within the scope of this invention.

**Claim 28.** Support for all features of this Claim can be found in ASN 09/201,287 as filed. Line 3 of page 1 states that it is one object of the invention to provide an anti-bacterial coating composition to be applied to a substrate. This protection is extended to a wider range of micro-organisms in lines 16-18 of page 2 of the application. Electrostatic spraying of a coating composition is disclosed at page 4, lines 6 to 7. At page 2, lines 12 to 14, it is disclosed that the stoving temperature of thermosetting powders is at least 120 °C, e.g. 140 °C to 210 °C. It would be obvious to a skilled worker in this field that the baking temperature should be adjusted accordingly when using thermoplastic polymer powders in place of thermosetting powders, therefore this feature is implicitly supported by the disclosure. Claim 1 discloses a powder coating composition particles each of which is a polymer powder and contains a biocide, whereby the biocide is substantially distributed through the

composition. The use of thermoplastic polymer powders is disclosed at page 2, lines 8 and 9. Claim 2 discloses a composition containing 0.1 to 20% by weight of a biocide.

**Claim 29.** Claim 14 of ASN 09/201,287 as filed discloses a method in which precursors of a polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules ground to form a powder, and the powder is sieved to a size appropriate for powder coating. There is no disclosure of using a pre-mixer for the initial mixing step, but it would be obvious to a skilled worker in this field that a pre-mixer could be used to carry out this step. There is also no disclosure of heating the mixture to a temperature high enough to melt it, or cooling the mixture prior to processing, although these steps may be obvious to the skilled worker in the field.

**Claim 30.** The additional step of mixing liquid anti-microbial agents with particles of a solid support material and mixing the particles into the coating pre-mix.

**Claim 31.** The method of Claim 30, further comprising treating the powder coating particles by impacting them with particles containing an anti-microbial agent to adhere the anti-microbial agent to the coating powder particles.

**Claim 32.** The method of Claim 30, further comprising dissolving, dispersing or mixing the anti-microbial agent and the other components of the powder coating formulation into a liquid solvent, followed by removing the solvent in such a way as to yield a solid product which can be processed into a powder coating.

These errors as identified above which are being corrected in this Reissue application, resulted from our failure to claim less than we had a right to claim in the above

'620 patent and occurred without any deceptive intent up to the time of the filing of my prior declaration and this declaration. The claims of the issued '620 patent were unnecessarily narrow and unintentionally excluded what we as inventors considered to be part of our invention.

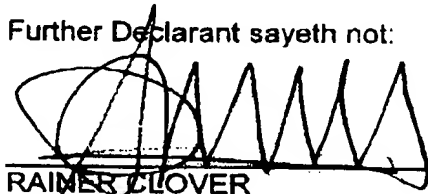
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To that end

I, RAINER CLOVER, hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful, false statement and the like so made are punishable by fine, or imprisonment or both, under §1001 of Title 18 of the United States Code, and that such wilful, false statements may jeopardize the validity of this application or any patent issuing therefrom.

June 6, 2002

Further Declarant sayeth not:



RAIMER CLOVER



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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REISSUE APPLICATION  
of U. S. Patent No. 5,980,620

Application No. 09/880,556

Examiner: Anthony Green

Group Art Unit: 1755

Confirmation No. 9517

Title: INHIBITION OF BACTERIAL GROWTH

**SUPPLEMENTAL REISSUE DECLARATION OF CO-INVENTOR**

Commissioner for Patents and Trademarks  
Washington, DC 20231

I, HAROLD BRODIE, a British subject, hereby declare under penalties of perjury as follows:

1. I am a named co-inventor in the above U.S. Patent No. 5,980,620 and U.S. Patent No. 6,129,782, which was a continuation of the '620 patent.
2. I reside at and have a post office address of Highfield, Histons Hill, Codsall, Staffordshire WV8 2ER. I am a British subject.
2. I make this declaration and my prior declaration in support of the Reissue application of U.S. Patent No. 5,980,620 filed on June 13, 2001, which has been assigned Application Serial No. 09/880,556 by the United States Patent and Trademark Office.
3. I reviewed and understand the contents of the Office Action dated December 11, 2001 in the Reissue application.

4. I have reviewed the proposed amended claims which contain proposed additions by underlining those words and proposed deletions by bracketing of words. Claims 12-32 are entirely underlined, as they are newly presented claims in this Reissue application, beyond claims 1-11 which appeared in the 620 patent as issued.
5. Support for the claims presented in this Reissue application are as follows, along with a description of the proposed changes.

**Claim 1:** support for all of the features of Claim 1 can be found in US patent application 09/201,287 as filed (granted as U.S. Patent No. 5,980,620). Claim 1 of the earlier application refers to a substantially dry powder coating composition comprising particles of polymer powder containing a biocide, whereby the biocide is substantially uniformly distributed throughout the composition. Paragraph 4 of page 2 discloses a range of micro-organisms that the biocide is active against. Therefore the powder coating composition is anti-microbial and is not limited to anti-bacterial applications. Paragraph 3 of page 4 discloses the substantially homogeneous distribution of the biocide in the polymer. Claim 10 discloses the use of thermosetting polymers as the polymer powder. Paragraph 1 of page 3 discloses a range of organic biocides suitable for this application.

**Claim 2.** Claim 2 discloses a composition containing 0.1 to 20% by weight of a biocide. Claim 2 is not amended, see Claim 2 of ASN 09/201,287 as filed .

**Claim 3.** Claim 3 is not amended except to be dependent from claim 1 or 2, see Claim 4 of ASN 09/201,287 as filed .

**Claim 4.** Claim 4 is not being amended, see Claim 5 of ASN 09/201,287 as filed .

**Claim 5.** Claim 5 is not being amended except to be dependent from claims 1 or 2, see Claim 6 of ASN 09/201,287 as filed .

**Claim 6.** Claim 6 is not being amended, see Claim 7 of ASN 09/201,287 as filed.

**Claim 7.** Claim 7 is merely being amended to be dependent from claim 1 and 2, see Claim 8 of ASN 09/201,287 as filed .

**Claim 8.** Claim 8 is not being amended, see Claim 9 of ASN 09/201,287 as filed.

**Claim 9.** Claim 9 is not being amended, see Claim 10 of ASN 09/201,287 as filed.

**Claim 10.** Claim 10 is not being amended. Claim 14 of ASN 09/201,287, as filed discloses a method of distributing a biocide substantially uniformly in a powder coating composition in which precursors of a polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules are ground to form a powder, and the powder is sieved to a size appropriate for powder coating. Page 2, lines 3-5 of the application as filed discloses the use of a range of thermosetting polymers for this application. A range of suitable biocides is disclosed at page 3, lines 1-5 of the same application. Claim 2 discloses a powder coating composition containing 0.1 to 20% by weight of a biocide. Claim 9 of the same application discloses a polymer powder having a particle size of less than 100 microns. The electrostatic spraying of the powder coating composition is disclosed at page 4, lines 6-7.

**Claim 11.** Claim 11 is not being amended. Support for claim 11 is found in ASN 09/201,287 as filed. That does not specifically claim a method of forming a coating on a metal substrate, but all of the features of this claim are disclosed in the body of the specification. Claim 13 of the same application refers to a metal article having an anti-microbial powder coating thereon. Claim 14 of the same application discloses a method of distributing a biocide substantially uniformly in a powder coating composition in which precursors of a polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules are ground to form a powder, and the powder is sieved to a size appropriate for powder coating. Claim 10 of this application as filed discloses the use of a range of thermosetting polymers for this application. A range of suitable biocides is disclosed at page 3, lines 1-5 of the same application. The electrostatic spraying of the powder coating composition is disclosed at page 4, lines 6-7. The curing of the coating is disclosed at page 2, lines 11-15.

**Claim 12.** Support for all features of this Claim can be found in ASN 09/201,287 as filed. Paragraph 2 of page 1 discloses a powder coating composition containing a biocide. Paragraph 4 of page 2 discloses a range of micro-organisms that the biocide is active against. Lines 3 to 6 of page 2 disclose resin based polymer powders. Paragraph 3 of page 4 discloses the substantially homogeneous distribution of the biocide in the polymer powder.

**Claim 13.** Support for claim 13 is found in lines 11-12 of page 3 of ASN 09/201,287 as filed, which states that useful proportions of biocide are from 0.1 to 10% by weight of the total powder composition. It therefore follows that 90 to 99.9% of the total powder composition will comprise the polymer powder. Claim 10 of the earlier application discloses the use of thermosetting polymer powders in the composition. Claim 11 as filed discloses the use of



thermoplastic polymer powders in the composition.

**Claim 14.** Support for claim 14 is found in page 2 of ASN 09/201,287, which state that many suitable biocides may be employed in the invention. The criteria for a suitable biocide is that the biocide can be provided in a suitable powder form and that it can survive the coating process. It follows from this statement that the use of solid anti-microbial agents is supported by this disclosure.

**Claim 15.** Support for claim 15 is found in a method of applying an anti-microbial coating to an article on page 4, line 6 of ASN 09/201,287 as filed. This states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed), or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial powder coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to the article. The anti-microbial powder coating composition of this invention may comprise particles of a thermosetting polymer, disclosed in claim 10. Each particle of the polymer powder contains a particle of a biocide so that the biocide is substantially uniformly distributed throughout the composition (see page 1, lines 6-7). The biocide may be an organic biocide as disclosed at lines 1-5.

**Claim 16.** A method of applying an anti-microbial coating on an article is disclosed at page 4, line 6 of ASN 09/201,287 as filed. This application states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed) , or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to

the article. The anti-microbial powder coating composition of this invention may comprise particles of a thermoplastic polymer, as disclosed in claim 11. Each particle of the polymer powder contains a particle of a biocide so that the biocide is substantially uniformly distributed throughout the composition (see claim 1). The biocide may be an organic biocide as disclosed at lines 1-5 of page 3. Claim 2 refers to a composition containing 0.1 to 20% by weight of a biocide.

**Claim 17.** A method of applying an anti-microbial coating on an article is disclosed at page 4, line 6 of ASN 09/201,287 as filed. This application states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed), or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial powder coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to the article. Lines 10-11 of page 4 of that application states that as each particulate contains the biocide, it is homogeneously distributed throughout the coating composition and so cannot separate out. Lines 6-7 of page 1 of the application disclose particulates comprising a polymer powder containing a biocide.

**Claim 18.** Support for all features of this claim can be found in ASN 09/201,287 as filed. Line 3 of page 1 states that it is one object of the invention to provide an anti-bacterial coating composition to be applied to a substrate. This protection is extended to a wider range of micro-organisms in lines 16-18 of page 2 of the application. A method of preparing the anti-microbial powder coating composition by homogeneously mixing an anti-microbial agent into a powder coating pre-mix is disclosed at page 4, lines 9-11.

**Claim 19.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states that many suitable biocides may be employed in the invention. The criteria for a suitable biocide are that the

biocide can be provided in a suitable powder form and that it can survive the coating process. A skilled person in this field would be aware that liquid biocides can be mixed with a suitable support matrix to form a powdered biocide suitable for this application. It is therefore implicit from this disclosure that the biocide may comprise a liquid biocide.

**Claim 20.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states that many suitable biocides or may be employed in the invention. The criteria for a suitable biocide is that the biocide can be provided in a suitable powder form and that it can survive the coating process. A skilled person in this field would be aware that liquid biocides can be mixed with a suitable support matrix to form a powdered biocide suitable for this application. It is therefore implicit from this disclosure that the biocide may comprise a liquid biocide. The term biocide is interchangeable with anti-microbial agent.

**Claim 21.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as N-(trichloromethyl)-thiolphthalamide may be substituted for those specifically mentioned.

**Claim 22.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder

coating". It is therefore implicit in this disclosure that other biocides such as 2-bromo-2-nitropropane-1,3-diol may be substituted for those specifically mentioned.

**Claim 23.** Claim 2 of ASN 09/201,287 as filed states the composition preferably contains 0.1 to 20% by weight of the biocide. As it is implicit from page 2, lines 18 to 23 of the earlier application as filed, that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 2-bromo-2-nitropropane-1,3-diol is within the scope of this invention.

**Claim 24.** Claim 2 of ASN 09/201,287 as filed states that the composition preferably contains 0.1% to 20% by weight of the biocide. Furthermore, Claim 3 of the same application states that a concentration between 2 and 6% by weight is more preferable. As it is implicit from page 2, lines 18 to 23 that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 2-bromo-2-nitropropane-1,3-diol is within the scope of this invention.

**Claim 25.** Page 2, lines 18 to 23 ASN 09/201,287 as filed states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione may be substituted for those specifically mentioned.

**Claim 26.** Page 2, lines 18 to 23 of ASN 09/201,287 as filed states, "Many biocid s may be

suitable employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione may be substituted for those specifically mentioned.

**Claim 27.** Claim 2 of ASN 09/201,287 as filed states that the composition preferably contains 0.1 to 20% by weight of the biocide. Furthermore Claim 3 of the same application states that a concentration between 2 and 6% by weight is more preferable. As it is implicit from page 2, lines 18 to 23 of the earlier application that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione is within the scope of this invention.

**Claim 28.** Support for all features of this Claim can be found in ASN 09/201,287 as filed. Line 3 of page 1 states that it is one object of the invention to provide an anti-bacterial coating composition to be applied to a substrate. This protection is extended to a wider range of micro-organisms in lines 16-18 of page 2 of the application. Electrostatic spraying of a coating composition is disclosed at page 4, lines 6 to 7. At page 2, lines 12 to 14, it is disclosed that the stoving temperature of thermosetting powders is at least 120 °C, e.g. 140 °C to 210 °C. It would be obvious to a skilled worker in this field that the baking temperature should be adjusted accordingly when using thermoplastic polymer powders in place of thermosetting powders, therefore this feature is implicitly supported by the disclosure. Claim 1 discloses a powder coating composition particles each of which is a polymer powder and contains a biocide, whereby the biocide is substantially distributed through the

composition. The use of thermoplastic polymer powders is disclosed at page 2, lines 8 and 9. Claim 2 discloses a composition containing 0.1 to 20% by weight of a biocide.

**Claim 29.** Claim 14 of ASN 09/201,287 as filed discloses a method in which precursors of a polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules ground to form a powder, and the powder is sieved to a size appropriate for powder coating. There is no disclosure of using a pre-mixer for the initial mixing step, but it would be obvious to a skilled worker in this field that a pre-mixer could be used to carry out this step. There is also no disclosure of heating the mixture to a temperature high enough to melt it, or cooling the mixture prior to processing, although these steps may be obvious to the skilled worker in the field.

**Claim 30.** The additional step of mixing liquid anti-microbial agents with particles of a solid support material and mixing the particles into the coating pre-mix.

**Claim 31.** The method of Claim 30, further comprising treating the powder coating particles by impacting them with particles containing an anti-microbial agent to adhere the anti-microbial agent to the coating powder particles.

**Claim 32.** The method of Claim 30, further comprising dissolving, dispersing or mixing the anti-microbial agent and the other components of the powder coating formulation into a liquid solvent, followed by removing the solvent in such a way as to yield a solid product which can be processed into a powder coating.

These errors as identified above which are being corrected in this Reissue application, resulted from our failure to claim less than we had a right to claim in the above

'620 patent and occurred without any deceptive intent up to the time of the filing of my prior declaration and this declaration. The claim of the issued '620 patent were unnecessarily narrow and unintentionally excluded what we as inventors considered to be part of our invention.

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To that end

I, HARRY BRODIE, hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful, false statement and the like so made are punishable by fine, or imprisonment or both, under §1001 of Title 18 of the United States Code, and that such willful, false statements may jeopardize the validity of this application or any patent issuing therefrom.

Further Declarant sayeth not:

June 6, 2002



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HARRY BRODIE